

NONPROVISIONAL APPLICATION FOR LETTERS PATENT

UNITED STATES OF AMERICA

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Be it known that we, Mr. James A. Jones, Senior, residing at
6920 Virlin B. Smith Road, Fairburn, GA 30213, and Mr. Tommie
Prothro, residing at 465 Piney Fork Lane, College Park, GA
30337, citizens of the United States of America, have invented
10 certain new and useful improvements in a

PORTABLE ELECTRONIC DEVICE CHARGER AND METHOD

15

of which the following is a specification:

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MYERS & KAPLAN
INTELLECTUAL PROPERTY LAW, L.L.C.
1899 Powers Ferry Road
Suite 310
Atlanta, GA 30339
Phone: 770-541-7444
Fax: (770) 541-7448
Email: twilliamson@mkiplaw.com
jmyers@mkiplaw.com

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PORTABLE ELECTRONIC DEVICE CHARGER AND METHOD**TECHNICAL FIELD**

5 The present invention relates generally to charging devices, and more specifically to portable electronic device chargers, wherein the battery from the portable electronic device may be recharged via a portable auxiliary battery or via various power sources, and wherein the portable electronic
10 device is retained by the charger via a variable-width, slidable securing mechanism.

BACKGROUND OF THE INVENTION

15 Battery chargers for cellular telephones, pagers or personal digital assistants, and/or other electronic devices, are typically powered via an electrical power source through a charger docking unit or the like. The charger docking unit is usually tethered via an electrical cord to a wall outlet,
20 thereby precluding portability of the charger while charging the electronic device. Although other sources of power may be utilized, such as, for exemplary purposes only, solar panels, wherein the electrical energy from the solar panels is applied

via an interface to the battery of the electronic device, such power sources still suffer from a lack of portability.

Still other power sources allow the insertion of primary
5 dry cells into a package that may then connect to the charger docking unit via wires or other connectors suitably-sized to mate with a receiver on the electrical/electronic or portable communications device. However, such power supplies do not retain the ability to be recharged in the standard fashion and
10 alternately to be carried as an auxiliary supply combined with a communications device holder.

Some cellular telephones, pagers or personal digital assistants are carried within a holster, wherein some such
15 holsters may incorporate an auxiliary battery therewith. The holster, which is typically sized for the specific cellular telephone, pager or personal digital assistant often must be removed to allow the communications device to seat within an associated charging device, thus prohibiting the auxiliary
20 battery from charging within the associated charging device. Thus, such charging devices typically do not permit the contemporaneous recharging of both the auxiliary battery and the cellular telephone battery. Further, such charging

devices are designed to accept a single type or manufacturer's line of portable electronic devices, and do not permit universal, or near universal, acceptance of all available communications devices.

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While some or all of the above-referenced charging devices and methods therefor may well be utilized for providing auxiliary power to a cellular telephone, pager, personal digital assistant, or other suitable electrical
10 device, such charging devices fail to adequately provide universal acceptance of differing cellular telephone, pager or personal digital assistant makes, models, configurations and connectivity interfaces, for recharging the batteries thereof.

15 Therefore, it is readily apparent that there is a need for a portable electronic device charger that effectively charges the battery of any selected cellular telephone, pager, personal digital assistant, or the like, thereby enabling extended operating time and avoiding the above-discussed
20 disadvantages.

BRIEF SUMMARY OF THE INVENTION

Briefly described, in a preferred embodiment, the present invention overcomes the above-mentioned disadvantages and meets the recognized need for such a device by providing a method and apparatus for enabling extended operating time for a cellular telephone, pager, personal digital assistant, or the like, wherein the main battery of the portable electronic devices may be recharged from an auxiliary battery contained within a portable holder, and wherein the auxiliary battery is itself recharged by connecting to an external energy source. The present invention further provides a charger capable of providing energy for replacement of the energy in the main battery the selected portable electronic device, while the charger is either connected or disconnected from the electrical power source.

According to its major aspects and broadly stated, the present invention in its preferred embodiment is a portable electronic appliance charger in the form of a docking device or holster. The docking device or holster is connected to the electrical power source during periods when the portable electronic appliance (i.e., cellular telephone, pager or

personal digital assistant is not in use. While connected, the auxiliary battery in the docking device or holster is charged or recharged. Concurrently, the main battery of the portable electronic appliance can be recharged by placing the
5 portable electronic appliance into the docking device or holster.

To transport the portable electronic appliance, the portable electronic appliance is placed in the docking device
10 or holster, and the entire assembly is then disconnected from the electrical power source and carried upon the person of the user, preferably via an attachment clip. To utilize the portable electronic appliance, the user simply removes the portable electronic appliance from the holster. As the
15 battery runs down, the user replaces the portable electronic appliance within the holster, thus allowing the auxiliary battery to recharge the main battery of the portable electronic appliance, thereby providing extended operating time before the portable electronic appliance and/or the
20 holster needs to be returned to the charger.

The present invention further allows for universal application to any portable electronic appliance, or the like,

wherein a sliding clip retainer removably fixes the portable electronic appliance within the docking device or holster.

Accordingly, a feature and advantage of the present
5 invention is the selective utilization of an auxiliary battery having suitable configuration and connection for replacement of the main battery of a portable electronic appliance.

Another feature and advantage of the present invention is
10 that the docking device or holster can be plugged into a universal charger for cellular telephones, pagers or personal digital assistants, and/or a particular charger designed for a portable cellular telephone, pager or personal digital assistant.

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Still another feature and advantage of the present invention is its ability to provide extended operating time for a cellular telephone, pager or personal digital assistant.

20 Yet another feature and advantage of the present invention is its ability to allow the main battery of a portable electronic appliance to be recharged from a portable source.

Still yet another feature and advantage of the present invention is its ability to accept cellular telephones, pagers or personal digital assistants of differing makes, models, 5 shapes, configurations and connectivity interfaces.

A further feature and advantage of the present invention is its ability to utilize various types of power sources.

10 Still a further feature and advantage of the present invention is its ability to utilize an auxiliary battery that is several times larger than the main battery of the portable electronic appliance.

15 These and other features and advantages of the present invention will become more apparent to one skilled in the art from the following description and claims when read in light of the accompanying drawings.

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BRIEF DESCRIPTION OF THE DRAWINGS

Having thus described the invention in general terms, the present invention will be better understood by reading the Detailed Description of the Preferred and Selected Alternate Embodiments with reference to the accompanying drawing figures, which are not necessarily drawn to scale, and in which like reference numerals denote similar structures and refer to like elements throughout, and in which:

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FIG. 1A is a front view of a portable electronic appliance charger according to a preferred embodiment of the present invention;

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FIG. 1B is a first side view of a portable electronic appliance charger according to a preferred embodiment of the present invention;

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FIG. 1C is a second side view of a portable electronic appliance charger according to a preferred embodiment of the present invention;

FIG. 2 is a front view of a portable electronic appliance charger according to a preferred embodiment of the present invention, shown connected to an energy source;

5 **FIG. 3A** is a perspective view of a portable electronic appliance charger according to a preferred embodiment of the present invention being worn by a user;

10 **FIG. 3B** is a perspective view of a portable electronic appliance charger according to a preferred embodiment of the present invention being worn by a user while a cellular telephone is in use; and

15 **FIG. 4** is a cutaway view of a portable electronic appliance charger according to an alternate embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED AND SELECTED ALTERNATE
EMBODIMENTS

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In describing the preferred and selected alternate embodiments of the present invention, as illustrated in the Figures, specific terminology is employed for the sake of

clarity. The invention, however, is not intended to be limited to the specific terminology so selected, and it is to be understood that each specific element includes all technical equivalents that operate in a similar manner to
5 accomplish similar functions.

Referring now to **FIGS. 1A - 1C**, apparatus **10** preferably comprises recharging holster cradle **20** for a communications means, such as, for exemplary purposes only, cellular
10 telephone **CP**, wherein recharging cradle **20** preferably comprises back **30**, first side **40**, second side **50** and bottom **60**. Apparatus **10** is preferably made of a formable material such as, for exemplary purposes only, plastic. It will be recognized by those in the art that any suitable formable
15 material could be utilized without departing from the present invention.

Retaining clip **70** is preferably movably incorporated into back **30** through second side **50**, via slot **100** formed in back
20 **30**. First side **40**, fixed clip **75**, bottom **60** and back **30** provide registration points against which cellular telephone **CP** rests when in cradle **20**, wherein fixed clip **75** restrains cellular telephone **CP** from forward and/or lateral movement.

Second side **50** is open to permit cellular telephone **CP** to be inserted into cradle **20** irrespective of the width of cellular telephone **CP**, thereby providing universal acceptance of different sizes of cellular telephones **CP**. Although cellular telephone **CP** is illustrated, it should be recognized that any suitable communication means could be utilized, such as, for exemplary purposes only, pagers, personal digital assistants, and so on.

Retaining clip **70** preferably comprises arm **90** and plate **80**, wherein arm **90** preferably passes through slot **100** and into back **30**, and wherein arm **90** preferably comprises securing means **95** for facilitating retention of cell phone **CP** within cradle **20**. Securing means **95** is preferably any suitable securing means known within the art, such as, for exemplary purposes only, a ratcheting mechanism comprising fixed pawls **72** and ridges **73** configured to cooperatively engage one another, wherein arm **90** of retaining clip **70** is easily inserted, and wherein engagement of pawls **72** on ridges **73** retains arm **90** securely within back **30**.

Auxiliary battery **110** preferably slidably engages back **30** of cradle **20**, wherein once engaged, auxiliary battery **110**

preferably resides in electrical communication with universal plug **135** via contacts **115** and associated wiring. As such, universal plug **135** preferably provides for electrical communication with charge controller **CT** of cellular telephone **CP** via charging connector **CC** of cellular telephone **CP** when cellular telephone **CP** is placed within cradle **20**. Energy preferably flows from auxiliary battery **110** to the main battery of cellular telephone **CP**, thereby charging the main battery thereof so that cellular telephone **CP** may be utilized upon removal from apparatus **10**. Auxiliary battery **110** can preferably be removed from cradle **20** by sliding auxiliary battery **110** therefrom.

Referring now to **FIG. 2**, apparatus **10** is preferably placed within charging device **CD**, wherein universal socket **130** of apparatus **10** preferably engages connector **C** of charging base **CD** in order to provide energy to auxiliary battery **110**, thereby preferably recharging auxiliary battery **110**. Alternately, apparatus **10** can be connected to a conventional car lighter via plug **P** and charging port **140**, or to mains power via line plug **LP** and power connector socket **150**, wherein line plug **LP** engages line socket **LS** and converts energy received from line socket **LS** from alternating current to

direct current via transformer **T**. In this latter embodiment, direct current electricity flows from line plug **LP** via cord **CR** to power connector plug **PG**, thereby providing energy to recharge auxiliary battery **110** onboard apparatus **10**.

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Preferably, belt clip **120** is carried by back **30** of cradle **20**, wherein belt clip **120** facilitates carrying of apparatus **10** upon a person.

10 Referring now to **FIGS. 3A** and **3B**, apparatus **10** can be worn on the belt of user **U**, wherein cellular telephone **CP** can either remain in apparatus **10** and wherein main battery of cellular telephone **CP** can be recharged for future use, as best shown in **FIG. 3A**, or wherein cellular telephone **CP** can be
15 removed from apparatus **10** and utilized by user **U**, as best shown in **FIG. 3B**. While being recharged in apparatus **10**, as shown in **FIG. 3A**, cellular telephone **CP** can alternately be utilized by connection of earphone/microphone combination **EM** to cellular telephone **CP**. Earphone/microphone combination **EM**
20 may alternately be in communication with and incorporated as part of apparatus **10**, thereby allowing user **U** to withdraw earphone/microphone combination **EM** from apparatus **10** and

utilize cellular telephone **CP**, while cellular telephone **CP** remains in apparatus **10**.

As best illustrated in **FIG. 4**, it is contemplated in an
5 alternate embodiment, that apparatus **200** could be a flat
battery card **202** having integral universal connector **210**
suitable for connecting directly to cellular telephone **CP**
directly via charging connector **CC**, and/or to charging socket
130 of apparatus **10**, wherein apparatus **200** further comprises a
10 facility for interconnection to a power source via charge port
240.

Additionally, apparatus **200** further incorporates battery
unit **220**, having energy cells **225**, such as, for exemplary
15 purposes only, rechargeable "gumstick" cells, and electronic
charge control circuitry **230**. It will be recognized by those
in the art that any suitable energy cell **225** could replace the
gumstick cells without deviating from the present invention.
Energy from battery unit **220** is transformed to appropriate
20 voltage and current for cellular telephone **CP** by electronic
charge control circuitry to recharge the main battery of
cellular telephone **CP** via electrical contacts **215** of integral
universal connector **210**. Battery unit **220** can be recharged

via charger port **240**, wherein charger port **240** is in electrical communication with electronic charge control circuitry **230**, and wherein electronic charge control circuitry **230** serves to control charge to battery unit **220**.

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It is envisioned in an alternate embodiment that the present invention can be sized to accommodate a personal digital assistant.

10 It is envisioned in an alternate embodiment that the present invention can be sized to accommodate a paging device.

It is further envisioned in an alternate embodiment that auxiliary battery **110** could be attached to cradle **20** via any
15 suitable interlocking device.

It is still further envisioned that the present invention could accommodate a digital or analog recording device.

20 It is also contemplated that the present invention could be sized to receive a two-way radio.

It is further contemplated that the present invention could be sized to receive a game playing device.

It is still further contemplated that the present
5 invention could accommodate electrical devices in general.

The foregoing description and drawings comprise illustrative embodiments of the present invention. Having thus described exemplary embodiments of the present invention, it
10 should be noted by those skilled in the art that the within disclosures are exemplary only, and that various other alternatives, adaptations, and modifications may be made within the scope of the present invention. Merely listing the steps of the method in a certain order does not constitute any
15 limitation on the order of the steps of the method. Many modifications and other embodiments of the invention will come to mind to one skilled in the art to which this invention pertains having the benefit of the teachings presented in the foregoing descriptions and the associated drawings.
20 Therefore, it is to be understood that the invention is not to be limited to the specific embodiments disclosed and that modifications and other embodiments are intended to be included within the scope of the appended claims. Although

specific terms are employed herein, they are used in a generic and descriptive sense only and not for purposes of limitation. Accordingly, the present invention is not limited to the specific embodiments illustrated herein, but is limited only
5 by the following claims.